

Off-Hugoniot shock compression of Zirconium probed at the microstructural and nanosecond scales with *in situ* x-ray diffraction.

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Zirconium, a group-IV transition metal, has fascinated the extreme pressure community since 1952, when Bridgman first inferred a phase transition while measuring resistance under pressure. We present results of off-Hugoniot shock compression of Zirconium probed at the microstructural and nanosecond scales with *in situ* x-ray diffraction. We also demonstrate how x-ray diffraction combined with static compression in the same pressure and temperature space can help to create an integrated picture of behavior of Zirconium under extreme conditions.

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